

CLAIMS:

We claim:

1. A method for automated error recovery of a storage controller LIC update process, comprising the steps of:
 - (A.) executing a state action of said storage controller LIC update process;
 - (B.) in response to determining that said state action has executed with at least one error, entering an error recovery procedure;
 - (C.) retrieving a next state action;
 - (D.) in response to determining that said next state action is not a last state action, returning to step (A.); and
 - (E.) ending said storage controller LIC update process.
2. The method of claim 1, wherein step (A.) further comprises the step of:
 - (A.) running an automated LIC dispatcher process that retrieves said state action from a state action table and executes said state action.
3. The method of claim 1, wherein said error recovery procedure comprises the steps of:
 - (A.) in response to determining that an error recovery count for a current state action is less than a maximum error recovery count, incrementing said error recovery count, otherwise exiting said error recovery procedure with a failed status;
 - (B.) in response to determining that an error recovery is possible, executing at least one error recovery action, otherwise exiting said error recovery procedure with said failed status; and
 - (C.) in response to determining that said at least one error recovery action was successful, determining a recovery passed state action, X, and exiting said error recovery procedure with a passed status, otherwise exiting said error recovery procedure with said failed status.
4. The method of claim 3, wherein step (B.) further comprises the step of:
 - (A.) retrieving said error recovery action from a state action table.
5. The method of claim 1, wherein step (B.) further comprises the step of:

- (A.) in response to exiting said error recovery procedure with a passed status, reentering said LIC update process at an error recovery passed state action determined by said error recovery procedure.
6. The method of claim 1, wherein step (B.) further comprises the steps of:
- (A.) in response to exiting said automated error recovery process with a failed status:
- a) suspending storage controller operation;
 - b) requesting repair of said storage controller; and
 - c) in response to completion of said repair of said storage controller, reentering said update process at a reEntry state action obtained from a state action table.
7. The method of claim 6, wherein the requesting step further comprises the steps of:
- (A.) automatically contacting a customer engineer; and
- (B.) sending diagnostic, location, and customer information to said customer engineer.
8. A system for automated error recovery of a storage controller LIC update process, comprising:
- a first cluster;
 - a second cluster;
 - a communication line between said first cluster and said second cluster;
 - a state action table, wherein said state action table comprises a plurality of individual state actions for an automated LIC update with error recovery;
 - an automated LIC dispatcher executing said state actions from said state action table to perform method steps comprising:
- (A.) executing a state action of said storage controller LIC update process;
- (B.) in response to determining that said state action has executed with at least one error, entering an error recovery procedure;
- (C.) retrieving a next state action;
- (D.) in response to determining that said next state action is not a last state action, returning to step (A.); and
- (E.) ending said storage controller LIC update process.
9. The system of claim 8, wherein said error recovery procedure comprises the steps of:

- (A.) in response to determining that an error recovery count for a current state action is less than a maximum error recovery count, incrementing said error recovery count, otherwise exiting said error recovery procedure with said failed status;
 - (B.) in response to determining that an error recovery is possible, executing at least one error recovery action, otherwise exiting said error recovery procedure with a failed status; and
 - (C.) in response to determining that said at least one error recovery action was successful, determining a recovery passed state action, X, and exiting said error recovery procedure with a passed status, otherwise exiting said error recovery procedure with said failed status.
10. The system of claim 9, wherein step (B.) further comprises the step of:
- (A.) retrieving said error recovery action from said state action table.
11. The system of claim 8, wherein step (B.) further comprises the step of:
- (A.) in response to exiting said error recovery procedure with a passed status, reentering said LIC update process an error recovery passed state action determined by said error recovery procedure.
12. The system of claim 8, wherein step (B.) further comprises the steps of:
- (A.) in response to exiting said automated error recovery process with a failed status:
 - a) suspending storage controller operation;
 - b) requesting repair of said storage controller; and
 - c) in response to completion of said repair of said storage controller, reentering said update process at a reEntry state action obtained from said state action table.
13. The system of claim 12, wherein the requesting step further comprises the steps of:
- (A.) automatically contacting a customer engineer; and
 - (B.) sending diagnostic, location, and customer information to said customer engineer.
14. An article of manufacture comprising a data storage medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform method steps for automated error recovery of a storage controller LIC update process on a storage controller, said storage controller comprising a first cluster, a second cluster, a communication line between said first cluster and said second cluster, a state action table,

wherein said state action table comprises a plurality of individual state actions for an automated LIC update with error recovery and an automated LIC dispatcher executing said state actions from said state action table, said method steps comprising the steps of:

- (A.) executing a state action of said storage controller LIC update process;
- (B.) in response to determining that said state action has executed with at least one error, entering an error recovery procedure;
- (C.) retrieving a next state action;
- (D.) in response to determining that said next state action is not a last state action, returning to step (A.); and
- (E.) ending said storage controller LIC update process.

15. The article of manufacture of claim 14, wherein said error recovery procedure comprises the steps of:

- (A.) in response to determining that an error recovery count for a current state action is less than a maximum error recovery count, incrementing said error recovery count, otherwise exiting said error recovery procedure with a failed status;
- (B.) in response to determining that an error recovery is possible, executing at least one error recovery action, otherwise exiting said error recovery procedure with said failed status; and
- (C.) in response to determining that said at least one error recovery action was successful, determining a recovery passed state action, X, and exiting said error recovery procedure with a passed status, otherwise exiting said error recovery procedure with said failed status.

16. The article of manufacture of claim 15, wherein step (B.) further comprises the step of:

- (A.) retrieving said error recovery action from said state action table.

17. The article of manufacture of claim 14, wherein step (B.) further comprises the step of:

- (A.) in response to exiting said error recovery procedure with a passed status, reentering said LIC update process at an error recovery passed state action determined by said error recovery procedure.

18. The article of manufacture of claim 14, wherein step (B.) further comprises the steps of:

- (A.) in response to exiting said automated error recovery process with a failed status:

- a) suspending storage controller operation;
- b) requesting repair of said storage controller; and
- c) in response to completion of said repair of said storage controller, reentering said update process at a reEntry state action obtained from said state action table.

19. The article of manufacture of claim 18, wherein the requesting step further comprises the steps of:

- (A.) automatically contacting a customer engineer; and
- (B.) sending diagnostic, location, and customer information to said customer engineer.